# CLAIMS

What is claimed is:

1. A sensor assembly for measuring pressure, comprising:

a first diaphragm having a surface which contacts a medium, the medium applying a pressure to the first diaphragm; and

a second diaphragm positioned next to the first diaphragm such that the pressure applied to the first diaphragm is transmitted as a force to the second diaphragm, the second diaphragm including an electronic circuit for converting the pressure applied to the sensor assembly to an electrical signal.

2. The sensor assembly of claim 1, further comprising a support shaft attached to the second diaphragm.

3. The sensor assembly of claim 2, wherein the support shaft is made of ceramic material.

4. The sensor assembly of claim 2, wherein the support shaft includes a plurality of grooves disposed about the outer surface of the support shaft, the grooves being spaced apart and extending along the length of the support shaft.

5. The sensor assembly of claim 4, wherein the grooves are coated with a metallic conductive material along the length of the groove.

6. The sensor assembly of claim 1, wherein the first diaphragm and the second diaphragm are made of silicon.

7. The sensor assembly of claim 1, wherein the first diaphragm and the second diaphragm each has a diameter of about 0.08 inch.

8. The sensor assembly of claim1, where the first diaphragm and the second diaphragm each has a thickness of about 0.005 inch.

9. The sensor assembly of claim 2, wherein the support shaft is mounted to a housing for holding the sensor assembly.

10. The sensor assembly of claim 9, wherein the housing is made of hard, machinable, corrosion resistant material.

11. The sensor assembly of claim 10, wherein the material is stainless steel.

12. The sensor assembly of claim 10, wherein the material is titanium.

13. The sensor assembly of claim 10, wherein the material is Monel.

14. The sensor assembly of claim 2, wherein the electronic circuit of the second diaphragm is electrically connected to the support shaft.

15. The sensor assembly of claim 14, further comprising a circuit board having a flexible connector connected to the support shaft so that electrical signals can be transmitted between the circuit board and the electronic circuit.

16. The sensor assembly of claim 1, wherein the first diaphragm includes an outer rim and a central boss, the outer rim and the central boss defining an annular recessed region.

17. The sensor assembly of claim 16, wherein the second diaphragm includes an outer rim, a central island and a side island adjacent to the central island, the outer rim and the side island defining a first narrow groove, and the side island and central island defining a second narrow groove.

18. The sensor assembly of claim 17, further comprising a first strain gage spaced from the first narrow groove, and a second strain gage spaced from the second narrow groove.

19. The sensor assembly of claim 18, wherein the first strain gage has an axis aligned substantially parallel to the first narrow groove, and the second strain gage has an axis aligned substantially parallel to the second narrow groove.

20. The sensor assembly of claim 18, further comprising a third strain gage and a fourth strain gage connected to the first and second strain gages to form a Wheatstone bridge.

21. The sensor assembly of claim 17, wherein the first and second diaphragms are arranged such that the force is transmitted from the boss of the first diaphragm to the central island of the second diaphragm.

22. A method of fabricating a pressure sensor module, comprising:

providing a first wafer from which a plurality of bossed diaphragms are fabricated;

providing a second wafer from which a plurality of sensor diaphragms are fabricated;

forming a plurality of strain gages on the second wafer, each of the strain gages corresponding to an individual sensor diaphragm;

etching cavities in the first wafer for each of the bossed diaphragms

and in the second wafer for each of the sensor diaphragms;

bonding the first wafer to the second wafer; and

separating the individual sensor modules from the bonded wafers.

23. The method of claim 22, wherein the first and second wafers are single silicon crystal wafers with a (100) orientation.

24. The method of claim 22, wherein forming the plurality of strain gages is performed with a diffusion process.

25. The method of claim 22, wherein forming the plurality of strain gages is performed with an ion implantation process.

26. The method of claim 22, wherein bonding is performed with a direct wafer bonding process.

27. The method of claim 22, wherein bonding is performed with a gold-gold bonding process.

28. The method of claim 22, wherein bonding is performed with a solderglass process.

29. A method of using a pressure sensor to measure the pressure of an eyeball, comprising:

placing a protective covering over a contact surface of the pressure sensor having a bossed diaphragm and a sensor diaphragm;

urging the covered contact surface against the patient's eyeball which imparts a force upon the contact surface, the force being transmitted from the bossed diaphragm to the sensor diaphragm;

measuring a signal voltage from a strain gage of the sensor diaphragm that is created by straining the gage when the contact surface is urged against the eyeball; and

converting the signal voltage to a pressure.

30. The method of claim 29, wherein the signal voltage is between about 2% to 4% of an excitation voltage of the strain gage.